IN THE CLAIMS:

The following listing of claims will replace all prior versions, and listings, of claims in the application.

1. (Currently Amended) A communication network, wherein the communication network comprises:

a plurality of network devices coupled to the communication network, wherein the plurality of network devices are operable to communicate with each other over the communication network by transmitting and receiving one or more data messages;

a first network device of the plurality of network devices, wherein the first network device comprises at least one of one or more inputs ~~and~~ or one or more outputs; and

a second network device of the plurality of network devices, wherein the second network device is coupled to a first computer system;

wherein a first data message of the one or more data messages comprises user configurable data, wherein the user configurable data is configured using the first computer system, wherein the first data message ~~groups together~~ contains data for one of a first of the one or more inputs and a second of the one or more inputs or a first of the one or more outputs and a second of the one or more outputs;

wherein the network devices are further operable to transmit a configuration data message, wherein the configuration data message specifies content of the one or more data messages, wherein the configuration data message is created in response to said configuring.

2. (Cancelled).

3. (Currently Amended) The communication network of claim 1,

wherein said configuring comprises the user configurable data ~~is~~ being configured ~~using the first computer system~~ using a graphical configuration tool on the first computer system.

4. (Currently Amended) The communication network of claim 1,

wherein ~~each one of the plurality of~~ the first network devices comprises one or more of a transmitter and a receiver operable to said transmit and said receive the one or more data messages.

5. (Currently Amended) The communication network of claim 1,

wherein each one of the one or more inputs is operable to acquire one or more of analog and discrete data; ~~and~~

wherein each one of the one or more outputs is operable to generate one or more of analog and discrete data; and

wherein the first data message comprises data for at least one analog channel or one discrete channel, wherein each channel can be either an input or an output.

6. (Currently Amended) The communication network of claim 1,

wherein-at least one of the one or more data messages comprises data for at least one channel of one or more of analog data and discrete data; and

wherein the first data message comprises one or more message arbitration IDs, wherein each one of the one or more message arbitration IDs identifies the data for the one or more channels in the first data message.

7. (Currently Amended) The communication network of claim 1,

wherein the first data message comprises data for the one or more channels of analog data, wherein data for each one of the one or more channels of analog data comprises at least one byte of data.

8. (Currently Amended) The communication network of claim 1,

wherein the first data message comprises data for the one or more channels of discrete data, wherein data for each one of the one or more channels of discrete data comprises at least one bit of data.

9. (Currently Amended) The communication network of claim 1,

wherein the first data message comprises data for one or more analog channels ~~of analog data~~; and

wherein the first data message further comprises data for one or more discrete channels ~~of discrete data~~; and

wherein the first data message ~~is operable to combine~~ includes data for one or more of the one or more analog channels ~~of analog data and~~ or the one or more discrete channels ~~of discrete data~~.

10. (Original) The communication network of claim 1,

wherein the user configurable data is operable to be stored in a configuration file; and

wherein the configuration file is operable to be used by one or more applications on the first computer system.

11. (Currently Amended) The communication network of claim 1,

wherein the communication network comprises one or more of:

a CAN network;

a CANOPEN network;

a CAL network;

a DeviceNET network; ~~and~~ or

any other type of an industrial network.

12. (Original) The communication network of claim 1, further comprising:

a graphical program that is operable to communicate with one or more of the first network device and the second network device;

wherein the first data message is operable to be received and processed by the graphical program.

13. (Original) The communication network of claim 12,

wherein the graphical program comprises a plurality of interconnected nodes that visually indicate functionality of the graphical program.

14. (Original) The communication network of claim 12,

wherein the graphical program comprises a block diagram portion and a user interface portion.

15. (Original) The communication network of claim 12,

wherein the graphical program comprises a graphical data flow program.

16. (Currently Amended) The communication network of claim 12,

wherein the graphical program is operable to perform one or more of:

an industrial automation function;

a process control function; ~~and~~ or

a test and measurement function.

17. (Original) The communication network of claim 12,

wherein the graphical program is operable to be executed.

18. (Currently Amended) The communication network of claim 1, further comprising:

an application program that is operable to communicate with one or more of the first network device ~~and~~ or the second network device;

wherein the first data message is operable to be received and processed by the application program; and

wherein the application program comprises a program created in one or more of a C, C++, Java, Visual Basic, ~~and~~ or any other program development environment.

19. (Currently Amended) The communication network of claim 1,

wherein the first network device further comprises one or more modules;

wherein a first of the one or more modules on the first network device comprises a network interface, wherein the network interface is operable to communicate on the communication network by said transmitting and said receiving the one or more data messages; and

wherein a second of the one or more modules on the first network device comprises at least one of the one or more inputs ~~and~~ or the one or more outputs.

20. (Currently Amended) The communication network of claim 1,

wherein the first network device is operable to be used in one or more of device prototyping, automotive bench testing, in-vehicle testing, ~~and~~ or data logging.

21. (Original) The communication network of claim 1,

wherein the first network device is operable to simulate a production device.

22. (Currently Amended) The communication network of claim 1,

wherein ~~each one of the at least one of the one or more inputs and the one or more outputs can be updated by a network message by~~ the one or more data messages can be transmitted upon one or more of the following events:

periodical determinism;

change of a state;

reaching a predetermined level; ~~and~~ or

poll from the communication network.

23. (Currently Amended) The communication network of claim 22,

wherein the first network device contains a first data channel and a second data channel, wherein each channel can be either an input or an output;

wherein the first network device is operable to transmit a first data message and a second data message; and

wherein the first data channel can be transmitted ~~using a first mechanism~~ upon a first event using the first data message and the second data channel can be transmitted ~~using a second mechanism~~ upon a second event using the second data message.

24. (Currently Amended) The communication network of claim 1,

wherein an acquisition of a first of the at least one of the one or more inputs ~~and~~ or the one or more outputs by the first device is operable to trigger a transmission of data from a second of the at least one of the one or more inputs ~~and~~ or the one or more outputs on the first device.

25. (Currently Amended) A flexible network system for network data transmission, wherein the data transmission occurs over a network, the flexible system comprising:

a first network device and a second network device, wherein both the first network device and the second network device are coupled to the network, wherein the first network device and the second network device are operable to communicate with each other using the communication network by transmitting and receiving one or more data messages, wherein the first network device comprises at least one of one or more inputs and one or more outputs, wherein the second network device comprises at least one of one or more inputs ~~and~~ or one or more outputs; and

a graphical configuration tool operable to configure contents of a first data message of the one or more data messages, wherein said configuring operates on both the first network device and the second network device;

wherein the first network device is operable to generate the first data message, wherein the first data message is operable to be propagated and received by the second network device, wherein the first data message groups together one of a first of the one or more inputs and a second of the one or more inputs or a first of the one or more outputs and a second of the one or more outputs;

wherein the network devices are further operable to transmit a configuration data message, wherein the configuration data message specifies content of the one or more data messages, wherein the configuration data message is created in response to said configuring.

26. Cancelled.

27. (Currently Amended) The ~~flexible~~ communication network ~~system~~ of claim 25,

wherein each one of the one or more inputs is operable to acquire one or more of analog and discrete data.~~; and~~

~~wherein each one of the one or more outputs is operable to generate one or more of analog and discrete data.~~

28. (Currently Amended) The ~~flexible~~ communication network ~~system~~ of claim 25,

the first data message further comprises data from the at least one of the one or more inputs and the one or more outputs.

29. (Currently Amended) The ~~flexible~~ communication network ~~system~~ of claim 25,

wherein ~~at least one of the one or more~~ the first data messages comprises data for one or more channels of one or more of analog data ~~and~~ or discrete data, wherein each channel can be either an input or an output;

wherein the first data message further comprises one or more message arbitration IDs, wherein each one of the one or more message arbitration IDs identifies the one or more channels in the first data message.

30. (Currently Amended) The ~~flexible~~ communication network ~~system~~ of claim 25, further comprising:

~~a first computer system coupled to the network; and~~

a graphical program executing on the computer system, wherein the graphical program is operable to communicate with one or more of the first network device ~~and~~ or the second network device;

wherein the first data message is operable to be received and processed by the graphical program.

31. (Currently Amended) The ~~flexible~~ communication network ~~system~~ of claim 30,

wherein the graphical program comprises a plurality of interconnected nodes that visually indicate functionality of the graphical program.

32. (Currently Amended) The ~~flexible~~ communication network ~~system~~ of claim 30,

wherein the graphical program comprises a block diagram portion and a user interface portion.

33. (Currently Amended) The ~~flexible~~ communication network ~~system~~ of claim 30,

wherein the graphical program comprises a graphical data flow program.

34. (Currently Amended) The ~~flexible~~ communication network ~~system~~ of claim 30,

wherein the graphical program is operable to perform one or more of:

an industrial automation function;

a process control function; ~~and~~ or

a test and measurement function.

35. (Currently Amended) The ~~flexible~~ communication network ~~system~~ of claim 30,

wherein the graphical program is operable to be executed.

36. (Currently Amended) The ~~flexible~~ communication network ~~system~~ of claim 25,

wherein ~~each one of the at least one of the one or more inputs and the one or more outputs can be updated by a network message by~~ the one or more data messages can be transmitted upon one or more of the following events:

periodical determinism;

change of a state;

reaching a predetermined level; ~~and~~ or

poll from the communication network.

37. (Currently Amended) The ~~flexible~~ communication network ~~system~~ of claim 36,

wherein the first network device contains a first data channel and a second data channel, wherein each channel can be either an input or an output;

wherein the first network device is operable to transmit a first data message and a second data message; and

wherein the first data channel can be transmitted ~~using a first mechanism~~ upon a first event using the first data message and the second data channel can be transmitted ~~using a second mechanism~~ upon a second event using the second data message.

38. (Original) A method for configuring network communication between a plurality of network devices, the method comprising:

coupling a first network device out of the plurality of network devices to a network;

coupling a second network device out of the plurality of network devices to the network, wherein the network is operable to communicate one or more data messages between the first network device and the second network device, wherein each of the first network device and the second network device comprises at least one of one or more inputs and one or more outputs, wherein the second network device is coupled to a first computer system;

configuring the at least one of the one or more inputs and the one or more outputs on the first network device;

configuring the at least one of the one or more inputs and the one or more outputs on the second network device;

configuring a first data message of the one or more data messages, wherein the first data message comprises data for the at least one of the one or more inputs and the one or more outputs, wherein the first data message contains one of input data and output data; and

propagating the first data message from the first network device to the second network device.

39. (Original) The method of claim 38,

wherein the network devices are further operable to transmit a configuration data message, wherein the configuration data message specifies content of the one or more data messages, wherein the configuration data message is created in response to said configuring.

40. (Original) The method of claim 38,

wherein at least one of the one or more data messages comprises one or more channels of one or more of analog data and discrete data; and

wherein the first data message comprises one or more message arbitration IDs, wherein each one of the one or more message arbitration IDs identifies the one or more channels in the first data message

41. (Original) The method of claim 38, further comprising:

a graphical program communicating with one or more of the first network device and the second network device;

wherein the first data message is operable to be received and processed by the graphical program.

42. (Original) The method of claim 41,

wherein the graphical program comprises a plurality of interconnected nodes that visually indicate functionality of the graphical program.

43. (Original) The method of claim 41,

wherein the graphical program comprises a block diagram portion and a user interface portion.

44. (Original) The method of claim 41,

wherein the graphical program comprises a graphical data flow program.

45. (Original) The method of claim 41,

wherein the graphical program is operable to perform one or more of:

an industrial automation function;

a process control function; and

a test and measurement function.

46. (Original) The method of claim 41, further comprising:

executing the graphical program.

47. (Original) The method of claim 38, further comprising:

an application program communicating with one or more of the first network device and the second network device;

wherein the first data message is operable to be received and processed by the application program;

wherein the application program comprises a program created in one or more of a C, C++, Java, Visual Basic, and any other program development environment.

48. (Original) The method of claim 38,

wherein said configuring the at least one of the one or more inputs and the one or more outputs on the first network device comprises user graphically configuring the at least one of the one or more inputs and the one or more outputs on the first network device.

49. (Original) The method of claim 38,

wherein said configuring the at least one of the one or more inputs and the one or more outputs on the second network device comprises user graphically configuring the at least one of the one or more inputs and the one or more outputs on the second network device.

50. (Original) The method of claim 38,

wherein said configuring the first data message of the one or more data messages comprises user graphically configuring the first data message of the one or more data messages.

51. (Currently Amended) The method of claim 38,

wherein ~~each one of the at least one of the one or more inputs and the one or more outputs can be updated by a network message by~~ the one or more data messages can be transmitted upon one or more of the following events:

periodical determinism;

change of a state;

reaching a predetermined level; ~~and~~ or

poll from the communication network.

52. (Currently Amended) The method of claim 51,

wherein the first network device contains a first data channel and a second data channel, wherein each channel can be either an input or an output;

wherein the first network device is operable to transmit a first data message and a second data message; and

wherein the first data channel can be transmitted ~~using a first mechanism~~ upon a first event using the first data message and the second data channel can be transmitted ~~using a second mechanism~~ upon a second event using the second data message.

53. (Original) The method of claim 38,

wherein an acquisition of a first of the at least one of the one or more inputs and the one or more outputs by the first device is operable to trigger a transmission of data from a second of the at least one of the one or more inputs and the one or more outputs on the first device.

54. (New) The communication network of claim 1,

wherein the first network device is operable to send the first data message to the second network device over the communications network.

55. (New) A communication network, wherein the communication network comprises:

a plurality of network devices coupled to the communication network, wherein the plurality of network devices are operable to communicate with each other over the communication network by transmitting and receiving one or more data messages;

a first network device of the plurality of network devices, wherein the first network device comprises at least one of one or more inputs or one or more outputs; and

a second network device of the plurality of network devices, wherein the second network device is coupled to a first computer system;

wherein a first data message of the one or more data messages comprises user configurable data, wherein the user configurable data is configured using the first computer system, wherein the first data message contains data for one of a first of the one or more inputs and a second of the one or more inputs or a first of the one or more outputs and a second of the one or more outputs;

wherein the one or more data messages can be transmitted upon one or more of the following events:

periodical determinism;

change of a state;

reaching a predetermined level; or

poll from the communication network;

wherein the first network device contains a first data channel and a second data channel, wherein each channel can be either an input or an output;

wherein the first network device is operable to transmit a first data message and a second data message; and

wherein the first data channel can be transmitted upon a first event using the first data message and the second data channel can be transmitted upon a second event using the second data message.

56. (New) A communication network, wherein the communication network comprises:

a plurality of network devices coupled to the communication network, wherein the plurality of network devices are operable to communicate with each other over the communication network by transmitting and receiving one or more data messages;

a first network device of the plurality of network devices, wherein the first network device comprises at least one of one or more inputs or one or more outputs; and

a second network device of the plurality of network devices, wherein the second network device is coupled to a first computer system;

wherein a first data message of the one or more data messages comprises user configurable data, wherein the user configurable data is configured using the first computer system, wherein the first data message contains data for one of a first of the one or more inputs and a second of the one or more inputs or a first of the one or more outputs and a second of the one or more outputs;

wherein an acquisition of a first of the at least one of the one or more inputs or the one or more outputs by the first network device is operable to trigger a transmission of data from a second of the at least one of the one or more inputs or the one or more outputs on the first network device.

57. (New) A flexible network system for network data transmission, wherein the data transmission occurs over a network, the flexible system comprising:

a first network device and a second network device, wherein both the first network device and the second network device are coupled to the network, wherein the first network device and the second network device are operable to communicate with each other using the communication network by transmitting and receiving one or more data messages, wherein the first network device comprises at least one of one or more inputs and one or more outputs, wherein the second network device comprises at least one of one or more inputs or one or more outputs; and

a graphical configuration tool operable to configure contents of a first data message of the one or more data messages, wherein said configuring operates on both the first network device and the second network device;

wherein the first network device is operable to generate the first data message, wherein the first data message is operable to be propagated and received by the second network device, wherein the first data message groups together one of a first of the one or more inputs and a second of the one or more inputs or a first of the one or more outputs and a second of the one or more outputs;

wherein each one of the one or more inputs is operable to acquire one or more of analog and discrete data; and

wherein each one of the one or more outputs is operable to generate one or more of analog and discrete data.

58. (New) A flexible network system for network data transmission, wherein the data transmission occurs over a network, the flexible system comprising:

a first network device and a second network device, wherein both the first network device and the second network device are coupled to the network, wherein the first network device and the second network device are operable to communicate with each other using the communication network by transmitting and receiving one or more data messages, wherein the first network device comprises at least one of one or more inputs and one or more outputs, wherein the second network device comprises at least one of one or more inputs or one or more outputs; and

a graphical configuration tool operable to configure contents of a first data message of the one or more data messages, wherein said configuring operates on both the first network device and the second network device;

wherein the first network device is operable to generate the first data message, wherein the first data message is operable to be propagated and received by the second network device, wherein the first data message groups together one of a first of the one or more inputs and a second of the one or more inputs or a first of the one or more outputs and a second of the one or more outputs; and

wherein the first data message further comprises data from the at least one of the one or more inputs and the one or more outputs.

59. (New) A flexible network system for network data transmission, wherein the data transmission occurs over a network, the flexible system comprising:

a first network device and a second network device, wherein both the first network device and the second network device are coupled to the network, wherein the first network device and the second network device are operable to communicate with each other using the communication network by transmitting and receiving one or more data messages, wherein the first network device comprises at least one of one or more inputs and one or more outputs, wherein the second network device comprises at least one of one or more inputs or one or more outputs; and

a graphical configuration tool operable to configure contents of a first data message of the one or more data messages, wherein said configuring operates on both the first network device and the second network device;

wherein the first network device is operable to generate the first data message, wherein the first data message is operable to be propagated and received by the second network device, wherein the first data message groups together one of a first of the one or more inputs and a second of the one or more inputs or a first of the one or more outputs and a second of the one or more outputs;

wherein the one or more data messages can be transmitted upon one or more of the following events:

periodical determinism;

change of a state;

reaching a predetermined level; or

poll from the communication network;

wherein the first network device contains a first data channel and a second data channel, wherein each channel can be either an input or an output;

wherein the first network device is operable to transmit a first data message and a second data message; and

wherein the first data channel can be transmitted upon a first event using the first data message and the second data channel can be transmitted upon a second event using the second data message.

60. (New) A network device for use in a network, wherein the network device comprises:

a network interface, wherein the network interface is coupled to a network, wherein the network interface is operable to communicate with one or more network devices using the network by transmitting and receiving one or more network data messages;

one or more I/O modules, wherein the one or more I/O modules include one or more of one or more input modules or one or more output modules, wherein the input modules are operable to connect to one or more sensors, wherein the output modules are operable to connect to one or more actuators;

a local bus, wherein the local bus couples the network interface and the one or more I/O modules together, wherein the local bus is operable to transmit one or more local bus messages between the network interface and the one or more I/O modules;

wherein the contents of a first network data message of the one or more network data messages can be configured using a graphical configuration tool, wherein the graphical configuration tool executes on a computer, wherein the computer is coupled to the network, wherein the graphical configuration tool is operable to configure the contents of the first network data message by transmitting a configuration data message to the network device, wherein the configuration data message specifies content of the first network data message;

wherein the network interface is operable to generate and propagate the first network data message to one or more network devices, wherein the first network data message contains data from two or more input modules or two or more output modules; and

wherein the first network data message can be transmitted upon one or more of the following events:

periodical determinism;

change of a state;

reaching a predetermined level; or

poll from the network.

61. (New) The network device of claim 60,

wherein the network device contains a first data channel on a first I/O module and a second data channel on a second I/O module, wherein each channel can be either an input or an output;

wherein the first network device is operable to transmit a first network data message and a second network data message; and

wherein the first data channel can be transmitted upon a first event using the first data message and the second data channel can be transmitted upon a second event using the second data message.

62. (New) The network device of claim 60,

wherein the first network data message further comprises one or more message arbitration IDs, wherein each one of the one or more message arbitration IDs identifies one or more data channels in the first data message.